FHWA Discretionary Programs
Value Pricing Pilot Program

SKETCH PLAN

Expansion of the Ongoing Program to Implement Variable Pricing for Heavy Vehicles in Lee County

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Application Sketch Plan

This proposed sketch plan for the Expansion of the Ongoing Program to Implement Variable Pricing for Heavy Vehicles in Lee County has been developed in accordance with the application guidelines for the Value Pricing Pilot Program authorized by Section 1216 (a) of the Transportation Equity Act for the 21st Century (TEA-21) in the Federal Register Document from October 5, 1998, FR Document 98-26531. As recommended, this sketch plan application has been submitted through the Florida FHWA Division Administrator before a full-scale grant application proposal is developed.

Also included in this sketch plan are estimated expenses for the various tasks outlined below. Note that these are cost estimates and will be refined in the detailed proposal.

1. Congestion Problem to be Addressed

This ongoing expansion of variable pricing to heavy vehicles project will provide a toll discount to heavy vehicles (defined as any vehicle with more than two axles) for traveling during specific periods of the day on the Cape Coral and Midpoint Memorial bridges who pay their tolls electronically. Heavy vehicles (vehicles with more than two axles) are currently excluded from the toll discount offered to two-axle vehicles under the Lee County Variable Pricing Project (see Table 1 for toll rates). All vehicles with two axles, including larger vehicles such as buses, can currently participate in the LeeWay ETC and variable pricing programs. However, any vehicle with more than two axles is not currently eligible for ETC or the discount program. Therefore, this project will allow all vehicles to become eligible for the variable pricing toll discount. In fiscal year 1999, a total of 110,923 heavy vehicle trips were recorded on the Midpoint Memorial and Cape Coral bridges.

The Cape Coral and Midpoint Memorial bridges serve a large number of Lee County travelers, particularly commuters, and act as a throttle for a significant portion of the County's road network. Therefore, altering traffic on these two bridges could affect traffic well beyond the bridges themselves.

Traffic congestion on these two bridges is not currently a severe problem (1999 level of service on both the Midpoint Memorial and Cape Coral bridges was "C" during the peak hour of the peak season, according to the Lee County Department of Transportation). However, traffic on each of these bridges has increased rapidly since the opening of the Midpoint Memorial Bridge in October 1997. In January 1998, average weekday traffic (ADT) on the Midpoint Memorial Bridge was 25,969 vehicles, this increased 17 percent to 30,994 vehicles by January 1999 and by another 14 percent to 35,262 vehicles by January 2000. On the Cape Coral Bridge, January ADT rose 1.2 percent from 35,748 in

1998 to 36,185 in 1999 and another 2.9 percent to 37,250 in 2000. Additionally, heavy vehicles routinely experience/cause more congestion, as measured in queue length, than other vehicles. The primary reason is that heavy vehicles can only use manned lanes (there are two in each direction on each bridge). These manned lanes routinely experience significantly longer queues (12 to 15 vehicles) than the automated lanes (four to six vehicles) during typical rush hours. The transactions in the manned lanes also take significantly longer, adding to the delays in these lanes.

Detailed examination of June 2000 data on heavy vehicle traffic on the Cape Coral Bridge shows a higher than average percentage of trucks during the morning peak period, but a lower than average percentage of trucks during the afternoon peak period. Therefore, at least during the morning peak period, there is an opportunity to move some heavy vehicles from the peak period. There is spare capacity during the periods just before and after both peak periods to accommodate changes in the time of those travel of heavy vehicles.

Table 1: Current Cape Coral and Midpoint Memorial Bridge Toll Rates

Program and Vehicle Description	**Time of Day**	**Toll**
Two-Axle Vehicles		
No ETC tag	All	$1.00
ETC tag with unlimited trips ($330 per year)	All	$0.00
ETC tag, not prepaid, 50-cent trips ($40 per year)	All	$0.50
ETC tag, prepaid, 50-cent trips ($40 per year)	Discount periods All other times	$0.25 $0.50
ETC tag, automatic vehicle identification only	Discount periods All other times	$0.50 $1.00
Three-Axle Vehicles (no ETC available)	All	$2.00
Four-Axle Vehicles (no ETC available)	All	$3.00
Five-Axle Vehicles (no ETC available)	All	$4.00
Six-Axle Vehicles (no ETC available)	All	$5.00

The ETC tag requires an initial, refundable $45 deposit. Additionally, prepaid tag users must deposit $40 into their account for tolls.

This ongoing variable pricing project will enhance toll collection services to allow smaller-sized heavy vehicles to use both the automated and manned lanes. Over-height and over-width three-plus-axle vehicles will continue to be excluded from the automatic lanes since the lanes are not large enough to accommodate the larger vehicles. (Note that all of these vehicles will be eligible for the variable toll discount, larger vehicles are simply restricted to manual lanes due to physical constraints.) (The only two-axle vehicles excluded from the automatic lanes due to width restrictions are LeeTran buses.)

The ongoing project will also encourage all heavy vehicles to travel outside the peak periods by offering a discount toll during specific off-peak periods. These two measures should significantly reduce congestion in the manned lanes on the toll bridges.

2. Nature of the Proposed Pricing Project

Proposed Pricing Project

The proposed project is an extension of currently ongoing expansion of variable pricing to heavy vehicles project currently being undertaken by the County. Issues associated with the pilot nature of the program, as well as anticipated integration with the Florida Department of Transportation's (FDOT) SunPass program have caused the identification of challenges not anticipated under the original grant application. This portion of the proposal identifies those challenges and briefly discusses them and their impact on the existing program.

The technology required to allow the automatic vehicle classification (AVC) component that is required to implement the expansion of value pricing to heavy vehicles has been evolving rapidly. The original application reasonably assumed that at least two additional and less expensive technologies, which were then entering their final testing phase, would be available for AVC in the heavy vehicle program. Unfortunately, the reality has proven different and significant issues remain relating to the technologies required for program implementation and the cost savings from the assumed less expensive technologies may not materialize. Additional funding is therefore requested for testing of potential AVC systems and the likely additional cost of deployment.

Relating to AVC hardware technology is the issue of AVC software and other upgrades required to implement the expansion of value pricing to heavy vehicles. There are two issues in this case. The first is similar to the above in that it appears that software requirements may be greater than anticipated. The other involves new opportunities in software that relate to increasing use of Internet based systems. Exploration of these systems is warranted both for the impact on the expansion of value pricing to heavy vehicles as well as the impact of this type of system on Lee County's overall value pricing program. This concept may prove particularly valuable in the County's ongoing value priced queue jump study. It is likely that under the queue jump process; electronic toll collection will be required at remote locations without the administrative infrastructure traditionally associated with toll collection facilities. An Internet based system, particularly with the rapid advances currently being made in wireless data technology, could prove especially effective. Additional funding is therefore requested for testing of potential AVC/ETC software systems and the likely additional cost of deployment.

An automatic violation enforcement system (VES) is likely to be required with the deployment of an automatic vehicle classification system. Currently, the County toll facilities only allow vehicles greater than two axels in the attended lanes at the toll facilities. Enforcement issues associated with 3 plus axle vehicles are therefore

straightforward because these vehicles are only allowed in the manned lanes. Additionally, the County is considering, and will likely become compatible with the FDOT SunPass program. With the implementation of automatic vehicle classification (AVC), most three plus axle vehicles will be allowed access to all toll lanes. With this access comes increasing opportunities for less obvious violations and therefore a greater potential for revenue loss. Additionally, as SunPass is also an ETC system, violation separation between the two various entities becomes an issue, and an automatic VES system is called for to handle the complexities involved. Consideration of grant funding of an appropriate VES system is therefore requested.

In the original implementation of the LeeWay variable pricing program, the ability to provide transponders at no cost to program participants was a significant incentive to attract patrons to the program. It is likely that a similar success could be obtained in the Heavy Vehicle program if a similar offer could be made. Grant funding of 10,000 additional transponders is therefore requested.

The exceptional popularity of the pricing program has helped the LeeWay program expand greatly. The expansion of value pricing to heavy vehicles and the ongoing queue jump program is likely to increase this popularity even further. This popularity has resulted in increased complexities brought about by an increase in the number of patrons using the system. Two issues have arisen. The first relates to inventory tracking of transponders as they move into and out of LeeWay service center at an increasing pace. The second relates to the current process of all annual and semiannual transponder programs expiring each year on October 31, with semi annual programs also expiring on April 30. This peak load on the LeeWay resources is becoming increasingly problematic. Grant funding is therefore requested to provide the software upgrades necessary to address these issues.

Overall Project Goals

The two primary goals of the expansion of variable pricing to heavy vehicles pilot project remain the same. The first is to reduce congestion caused by heavy vehicles on the Cape Coral and Midpoint Memorial bridges and potentially beyond the toll plazas by altering their travel behavior. Congestion will be reduced because of heavy-vehicle drivers changing their time of travel to the off-peak periods and changing their lane use to the less crowded automatic lanes.

The second goal is to carefully monitor and evaluate the response of heavy vehicle drivers to the discount toll program. The magnitude of the response of heavy vehicle drivers to the discount toll will be compared to the response of two-axle vehicle drivers on the same bridges. It is hypothesized that heavy vehicles will be more price sensitive than two-axle vehicles to the discount toll and therefore a larger percentage will shift their time of travel to the discount periods once the variable toll is offered to them. Comparing the two response rates will provide valuable information regarding the price elasticity of the two user groups. This, in turn, will provide insightful information to

other communities contemplating value pricing. Additionally, the reduced toll has the potential to induce additional heavy vehicle traffic on the toll bridges. Heavy vehicle owner/operator surveys, along with traffic data, will be analyzed to determine the amount of induced heavy vehicle traffic, if any.

Study and Project Timeline

The existing timeline for the project will be maintained.

3. Additional Signatories and Project Supporters

At a minimum, the Lee County Board of County Commissioners as owner/operator of the toll bridges and the Florida Department of Transportation as an integral part of the current variable pricing project would be signatories of the cooperative agreement with the FHWA for this proposal.

4. Public Participation and Equity Concerns

Public Participation will continue as proposed in the existing project.

No concerns regarding equity are anticipated with this proposed project.

5. Legal and Administrative Authority Required

The Lee County Board of County Commissioners (BOCC) and the Florida DOT District 1 Office in Bartow will both need to approve this project. These organizations have been very supportive of the variable pricing program to date. While BOCC approval will be needed to implement programs developed in this study, the BOCC's past strong support for the current variable pricing project bodes well for the support of this proposed project.

6. Plans for Pre-Project Study

Project Studies, both pre and post project will remain as in the current project.

Estimated Costs

Table 3: Estimated Costs

Task	**Projected Cost**
AVC Technology Research and Implementation	**$ 400,000**
AVC Software Enhancements	**$ 300,000**
Violation Enforcement System	**$ 2,000,000**
Additional Transponders	**$ 350,000**
Service Center Software Enhancements	**$ 250,000**
Total	**$ 3,300,000**

Lee County, Florida

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Projected Budget

AVC Technology Research and Implementation

Test Installation of AVC Technologies	$45,000	Installation of up to 3 technologies in ACM, Express and MLT lanes
Evaluation of Technologies	$30,000	(it is assumed that hardware would be reused where practical)
Total	$75,000	

AVC Software Upgrades

Hardware Upgrades	$351,000	Existing Lee County Lane Controllers Cannot handle the upgrade to AVC
Software Upgrades	$181,400	
Total	$532,400	

Violation Enforcement System (VES)

Lane Hardware	$1,020,000	31 lanes plus 3 spare @ $30K per lane
Establish and Locate Processing Center	$650,000	Location and Hardware
Software and Integration	$330,000	
Total	$2,000,000	

Additional Transponders	$350,000	10,000 @ $35 per unit
Service Center Software Enhancements	$250,000	
Total	$3,207,400	